

POQUONOCK RIVER GROTON CONNECTICUT

SURVEY REPORT



**DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.**

OCTOBER 1969

SURVEY REPORT ON POQUONOCK RIVER
GROTON, CONNECTICUT

SYLLABUS

The Division Engineer finds that Federal navigation improvement for Poquonock River and vicinity is not warranted at this time. Federal navigation improvement of Poquonock River, by providing a channel from deep water in Pine Island Bay upstream to the naturally deep anchorage area in the river, is dependent upon local construction of a 200-boat marina adjacent to the existing mooring area. At present there is no assurance that such a marina would be provided. He also finds that the improvement of Baker Cove and Pine Island Bay by provision of additional anchorage areas and access channels is economically justified, but required measures of local participation are not available. He recommends no Federal improvement for Poquonock River at Groton, Connecticut at this time.

Poquonock River, Connecticut

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:

NEDED-R

17 October 1969

SUBJECT: Survey of Poquonock River, Groton, Connecticut

Chief of Engineers
ATTN: ENGCW-PD

AUTHORITY

1. This report is submitted in compliance with an item included in Section 112 of the River and Harbor Act approved 3 July 1958, which reads as follows:

"The Secretary of the Army is hereby authorized and directed to cause surveys to be made at . . . Poquonock River at Groton, Connecticut . . . subject to all applicable provisions of Section 110 of the River and Harbor Act of 1950,"

2. The report was assigned to the New England Division by letter of the Chief of Engineers dated 21 July 1958.

PURPOSE AND EXTENT OF STUDY

3. The study was made to determine the need and economic justification for Federal navigation improvements in the Poquonock River and in the two small bodies of water contiguous to its mouth, Baker Cove and Pine Island Bay. The study entailed a public hearing to learn the nature and extent of local desires, a detailed hydrographic survey to determine desired channel, anchorage, and breakwater sites, and engineering and economic studies. All available maps, charts, and photographs were utilized.

DESCRIPTION

4. The Poquonock River is a tidal estuary in the southeastern part of Connecticut. It is located at the north side of Fishers Island Sound 1 mile east of the entrance to New London Harbor. The estuary, which has a total drainage area of 29 square miles, consists of three contiguous tidal bodies - Pine Island Bay, Baker Cove, and the Poquonock River. These areas are shown on the inclosed maps.

5. The main boat anchorage is located in Pine Island Bay and is bounded by Avery Point, Jupiter Point, Bushy Point and Pine Island. The anchorage provides protection from all winds except those from the southwest. Pine Island Bay is 70 acres in area and is used exclusively by recreational craft. Depths in the central portion range from 5 to 9 feet at mean low water decreasing to 2 feet off Pine Island and in the berth areas to the northwest side of the anchorage and along Jupiter Point.

6. Baker Cove is a sheltered tidal arm about 90 acres in area. Two small streams enter the upper end of the cove and with tidal action maintain a narrow channel along the western shore. Depths of 3 to 6 feet exist in the natural channel and decrease to 2 feet at the numerous private wharves along the western shore.

7. The tidal portion of the Poquonock River extends over an area of 250 acres. The small recreational fleet based near the upper end is well protected from all storms. The river inlet is generally between 600 and 1,500 feet wide, except opposite the western end of Bushy Point Beach where the inlet width decreases to 150 feet. The western end of this barrier beach was breached during the hurricane flood of September 1938. Subsequent storms have formed a large shoal at the mouth of the inlet, where the controlling depth has dwindled to 1.7 feet opposite the breach. The shoal now extends 1 mile upstream and is cut by a sinuous, narrow channel having depths of 2 to 3 feet. In the upper part of the river, depths of 6 to 11 feet are available over a 40-acre area extending 0.9 mile southward from the railroad bridge at Poquonock Bridge. Between the railroad bridge and the head of navigation, depths of 3 to 5 feet are reported.

8. The mean tidal range is 2.6 feet. The locality is shown on the U.S. Geological Survey New London quadrangle, on U. S. Coast and Geodetic Survey Charts 293, 358, 359, and 1,211, and on the maps accompanying this report.

TRIBUTARY AREA

9. The immediate tributary area is the southwestern portion of the town of Groton. Within the southwestern end of the town there is the incorporated city of Groton which has a mayor and councilor form of government, while the outlying area is governed by a town council and selectmen. In 1967, the estimated population of the town of Groton was 35,500, a 14 percent increase from the 1960 population of nearly 31,000. The main industrial and business districts are located along the left bank of the Thames River at the west side of the town. Submarine construction, nuclear research, and pharmaceuticals are the major industries.

10. Most of the frontage along the shores of Poquonock River is owned by the State and is relatively inaccessible by road. The State-owned Trumbull Airport, the principal airport in the eastern third of the State, occupies the east shore of Baker Cove and the west shore of Poquonock River upstream to the railroad bridge. On the east shore of the Poquonock River a 220-acre triangular area between Bushy Point and the former railroad crossing 0.6 mile south of Poquonock Bridge was purchased by the State in 1963 for future development of a "Bluff Point State Park". The adjoining shoreline between this former crossing and the existing railroad bridge is also undeveloped. A year-round residential area is located at the head of the river.

11. The western shore of Baker Cove along Jupiter Point is dotted with summer cottages, year-round residences, a small boatyard and a seafood market. Except for a few residences and summer cottages on Jupiter Point, the northern shore of Pine Island Bay is used for recreational boating facilities. The southeastern branch of the University of Connecticut is now established at the former Coast Guard training station at Avery Point, at the entrance to the bay, and is planning construction of additional facilities on Pine Island. Otherwise, the islands at the east side of the bay are undeveloped.

12. The area is served by several forms of transportation. Immediately to the westward, the 33-foot Federal channel in New London Harbor provides access for deep draft vessels. The Shore Line of the Penn Central Railroad, formerly the New York, New Haven and Hartford Railroad, crosses the Poquonock River 0.4 mile south of Poquonock Bridge. Connecting bus line service to New London and

Norwich, Connecticut and Westerly, Rhode Island operates on U. S. Route 1, which passes through Poquonock Bridge at the head of the river inlet. Interstate Route 95 crosses the system of water supply reservoirs north of Poquonock Bridge. Two scheduled airlines and charter service are available at Trumbull Airport.

BRIDGES AND OTHER FACILITIES AFFECTING NAVIGATION

13. A fixed, single span, railroad bridge, conveying the Shore Line of the Penn Central Railroad crosses the river 0.4 mile south of the Poquonock Bridge. It has a horizontal clearance of 54 feet and a vertical clearance of 9.4 feet at mean high water. The structure was approved by the Secretary of War on 20 March 1916.

14. About 0.4 mile farther south, the deep water area opposite the airport is roughly bisected by the embankment of a former spur railroad line. Built in 1908, the track was removed in 1948 during a major expansion of the airport, providing a horizontal clearance of 53 feet between the remaining abutments. No navigation improvements have been considered upstream of the abandoned railroad bridge crossing.

15. A submarine telephone cable extends along the natural bottom from the northwest side of Avery Point to the northwest end of Pine Island, connecting auxiliary facilities on Pine Island with Avery Point. A 6-inch water main extends along the natural bottom from the foot of Jupiter Point Road to the north shore of Pine Island, except at the shore ends where it is buried about 3.5 feet. Installed for use by the U. S. Army Coast Artillery Corps these utilities were taken over by the Coast Guard after World War II but are not now actively used.

PRIOR REPORTS

16. No prior navigation reports have been made concerning the Poquonock River by the Federal Government or the State of Connecticut. A cooperative shore erosion control study of the conditions existing between 1949 and 1952 was made for Pine Island, Avery Point, Jupiter Point, Trumbull Airport, Bushy Point and Bushy Point Beach. It was found that no Federal benefits would result from protective measures in the Poquonock River area and no Federal participation was considered. Published as House Document 31, 83rd Congress, 1st Session, the report on this study entitled "Area 5,

Pawcatuck River to Thames River, Connecticut Beach Erosion Control Study" recommended that local interests consider construction of a dumped-riprap mound along the west side of Jupiter Point for the protection of private property.

OTHER IMPROVEMENTS

17. No dredging improvements have been made by local interests other than periodic dredging of berth areas at the northwest side of Pine Island Bay. The U. S. Coast Guard maintains a light at Avery Point, a flashing bell buoy off the southern end of Pine Island, and two unlighted buoys to mark offshore rocks at either side of the inner approach to Pine Island Bay. No lights or buoys are maintained in the existing special anchorage in the northern half of Pine Island Bay inclosed by Avery and Jupiter Points.

TERMINAL AND TRANSFER FACILITIES

18. With the exception of a small launching ramp at the town-leased beach, there are no public landings or service facilities along the Poquonock River. A town-owned pier near the northwestern end of the railroad bridge is in poor repair and is no longer in use. A few private piers and a small livery pier are located near the railroad bridge.

19. Terminal facilities at Pine Island Bay, listed clockwise from the University of Connecticut Marine Biological Laboratory wharf at Avery Point, include the Shennecosset Yacht Club piers and marine railway, a small marina, and a large marina and livery. The State Fisheries and Game Commission maintains a public launching ramp and parking area at the foot of Bayberry Lane, between the larger marina and Jupiter Point. The Avery Point and Pine Island piers are now restricted to use by marine research vessels. Facilities at Baker Cove consist of a small boatyard at the base of Jupiter Point and a seafood market pier, open to the public. The marina and boatyard establishments at both waterways build, repair, service and store boats up to 50 feet in length.

IMPROVEMENTS DESIRED

20. A public hearing was held in the City of Groton, Connecticut on 28 March 1960 to give local interests an opportunity to express their

views on the need and desirability of navigation improvements by the Federal Government. The hearing was attended by 98 persons, including representatives of Federal, state and local governments and boating interests.

21. The following navigation improvements were requested by local officials, marina operators and boatmen:

- a. An anchorage 7 feet deep over an area of 50 acres in Pine Island Bay;
- b. Channel improvements in Baker Cove and an anchorage 6 feet deep and 50 acres in area in Baker Cove;
- c. A channel in the Poquonock River having a depth of 6, 8 or 10 feet extending from deep water in Pine Island Bay about 7,800 feet upstream to deep water 0.3 mile south of the former railroad crossing opposite the town-leased beach;
- d. Anchorage in the upstream reaches of the Poquonock River;
- e. Breakwater protection for Pine Island Bay.

22. Subsequent to the public hearing and request for improvements, the navigation study was held up for a considerable length of time while studies were being made by the state to determine the feasibility of expanding air traffic facilities at Trumbull Airport. Extension of the airport runway southwesterly would have precluded navigation development of Pine Island Bay and Baker Cove because of the physical extension as well as the vertical height restrictions imposed on the waterways. The recent Connecticut Department of Aeronautics' decision to substantially modify its plans for Trumbull Airport, permitted completion of the navigation study.

EXISTING AND PROSPECTIVE COMMERCE

23. No waterborne commerce has been reported in recent years. One lobster boat is based at Baker Cove but no expansion of the seafood market facility is anticipated.

VESSEL TRAFFIC

24. Traffic in all three waterways is almost entirely by recreational boating. Based on a net season of 160 days, it is estimated that existing craft make 18,000 round trips annually through the outer section of Pine Island Bay. About 390 boats base in the study area, of which 270 are in Pine Island Bay, 75 in Baker Cove and 45 in the upper reaches of the Poquonock River. Two-thirds of the Pine Island Bay fleet is berthed along the northern shore of the bay; the remaining 90 boats moor or anchor in the existing special anchorage in the northern half of the bay.

DIFFICULTIES ATTENDING NAVIGATION

25. The principal navigation difficulty is the lack of adequate channel depths in the Poquonock River. Navigation across the major shoal in the lower third of the river is difficult, even with extensive local knowledge of existing conditions. The controlling depth of 1.7 feet at mean low water limits use of the waterway by most craft during low tide periods. Several groundings were reported by boat owners at the public hearing and some have indicated that they no longer attempt to enter the river. Damages reported have been relatively small as the shoals consist primarily of mud and sand. Straightening and deepening of the sinuous natural channel would eliminate navigation delays and reduce grounding damages.

26. The natural channel in Baker Cove is relatively narrow and is located close to many of the piers along the western shore. Local knowledge is required when navigating at half tide or less.

27. Shallow depths in the northeastern section of the anchorage and exposure to southwesterly waves through the entrance are the main difficulties at Pine Island Bay. Sheltered anchorage exists in the lee of Pine Island but boat operators shun it because of rock and shoal areas.

WATER POWER AND OTHER SPECIAL SUBJECTS

28. Water power, water supply, or flood control matters are not pertinent to this tidal area. No pollution problems have been reported.

PROJECT FORMULATION

29. The various aspects of the locally proposed improvement plans and alternative plans were studied to see if they would meet future navigation needs, be economically justifiable, and provide the maximum net benefits. The first step in the analysis was to estimate the future expansion of the fleet in the three main areas of the project; Pine Island Bay, Baker Cove, and the Poquonock River. The subject area is in a growing community and can expect to realize a yearly expansion in boating use. Nationally, this amounts to an annual average increase of 6 percent.

30. In Pine Island Bay, the fleet, based on the national rate, would increase from 270 boats to 1,080 boats during the next 50 years. However, the maximum anchorage available is 40 acres with breakwater protection provided, a plan requested by local interests. At ten boats per acre, 400 boats can be accommodated, an increase of 310 over the existing fleet size. Estimates made of the costs and benefits of the breakwater-anchorage plan resulted in a benefit-cost ratio of 0.6. Therefore, it was concluded that a detailed engineering study of the breakwater-anchorage plan was not feasible at this time. Without breakwater protection, 23 acres of mooring area are available in the lee of Avery Point. This alternate plan of improvement would accommodate 215 boats. Of the existing fleet of 270 boats and 10 equivalent transient boats, 110 now use portions of the proposed mooring area. That would leave room for 105 new boats including 100 locally based boats and 5 equivalent transients. It is estimated that it would take seven years for the fleet to reach that size. The details on first costs, annual charges and benefits are contained in Appendix A.

31. Local interests requested a 50-acre anchorage in Baker Cove. However, after providing for a 100-foot wide navigation channel and keeping away from existing facilities, only 7 acres would be reasonably available for mooring purposes. Although national growth rates indicate the fleet size at the end of the project life could be 300 boats, the area available will limit it to 145 boats, an increase of 70 boats. This increase will take 16 years to occur. See Appendix A.

32. The fleet in the upper reaches of the Poquonock River is expected to increase from the present 45 boats to 120 boats. This is the capacity of the 15 acres of available mooring space. In addition to space allowance for 10 existing and 5 future equivalent transient boats, the permanent fleet can be expanded by 60 boats.

33. The improvement plans considered for the three areas were 23 acres of anchorage plus entrance and access channels to berths for Pine Island Bay, 7 acres of anchorage and an access channel for Baker Cove, and an entrance channel for Poquonock River. Each plan was studied on its own merits and benefit-cost ratios were estimated. All details are given in Appendix A and summarized under paragraph 34.

PLANS OF IMPROVEMENT

34. After various proposed plans were examined, those which were obviously infeasible were discarded as discussed above. The remaining plans were then studied in more detail. The plans for Pine Island Bay and Baker Cove were found to be economically justified, whereas the plan for the Poquonock River was not. Details of the analyses of these plans are shown in Appendix A. In that appendix, the estimates for first costs, annual charges and benefits are shown as well as comparisons of cost and benefits. For this reason and for reasons given under "Discussion", sections explaining those items have been deleted from the main text of the report.

DISCUSSION

35. The lower reach of the Poquonock River and the bodies of water contiguous to its mouth, Baker Cove and Pine Island Bay, provide limited anchorage areas for recreational boating interests. Under existing conditions, navigation in the entire waterway is difficult, even with knowledge of the area. The channel in Baker Cove is located close to many piers extending out from the western shore, while shoals and sharp bends form other hazards. Shallow depths and exposure to wave action from the southwest limits the use of the existing anchorage in Pine Island Bay. Rocks and shoals prevent safe anchorage in the lee of Pine Island. There are 250 locally based and equivalent transients crowded together in what naturally deep water there is available in these areas. As a result of this congestion, boat owners do not get full use of their boats.

36. In order to alleviate the condition local interests requested Federal assistance in developing new anchorage areas and channel improvements in Pine Island Bay, Baker Cove and Poquonock River,

including a breakwater to protect Pine Island Bay. The requested improvements were studied to determine economic justification. Estimates of costs and benefits for various plans were made. Results of the study indicate that improvement of Pine Island Bay could be accomplished by dredging a 13-acre anchorage in the northern part of the harbor and a 10-acre anchorage in the southern portion, both to a depth of 6 feet; and a channel 100 feet wide, 6 feet deep between the anchorages, leading to the entrance of Poquonock River from the west and a channel of similar dimensions providing necessary access to the marine biological laboratory main pier, the yacht club, two marinas, and the public launching ramp facilities along the north shore of Pine Island Bay. The total first cost of construction for this improvement is estimated to be \$223,000, with annual charges amounting to \$16,500. Annual benefits resulting from providing additional anchorage space for 230 existing and new boats amount to \$47,600. This yields a benefit-cost ratio of 2.9 to 1.0.

37. A plan of improvement for Baker Cove would provide a 7-acre anchorage for 155 boats. This would give a channel 6 feet deep, 100 feet wide, 900 feet long through the northeastern end of Pine Island Bay, joining a channel of similar dimensions extending about 3,000 feet into Baker Cove with two branches 900 feet and 400 feet long, respectively. The total first cost of construction is estimated to be \$382,000, with annual charges amounting to \$25,200. Annual benefits would amount to \$27,000 resulting in a benefit-cost ratio of 1.1 to 1.0.

38. A possible improvement for Poquonock River proper consists of a channel 6 feet deep, 100 feet wide extending 7,000 feet upstream from Pine Island Bay to naturally deep water in the upper reach of the river. To assure stabilization of the channel and reduce future maintenance a stone dike is included between Bushy Point Beach and Bushy Point. The first cost of construction is estimated to be \$393,000 with an annual charge of \$25,600. The channel improvement would benefit an estimated 120 boats that would anchor in the naturally deep water of the upper river. Total annual benefits are estimated to be \$13,000. The benefit-cost ratio is 0.5 to 1.0. Thus, improvement of Poquonock River proper is not economically justified based on use of the upper river as open anchorage. Because of the absence of shore facilities in this area, a marina capable of handling 200 boats is needed to promote growth of boating activity in the river sufficient to justify construction of the channel improvement. However, there is no local organization willing to provide a marina in the river, at this time.

39. Because the navigation improvements economically justified for Pine Island Bay and Baker Cove are solely for the benefit of recreational craft, local interests would be required to provide a cash contribution of 50 percent of the first cost for construction currently estimated to be \$111,500 and \$191,000, respectively. This required cost share in the form of a cash contribution does not include the cost for construction of required public landings.

40. All Federal, state and local agencies having an interest in navigation improvements in the vicinity of Poquonock River were contacted during the course of the study to obtain their views and comments on the considered improvements. The United States Fish and Wildlife Service submitted a conservation and development report on the subject area which is included in Appendix B. The recommendations made by the Fish and Wildlife Service were considered in final development of the proposed plans.

41. Late in the spring of 1969 it was learned that the City of Groton was working with the newly created Connecticut Department of Community Affairs to develop a master plan for land and harbor improvement. This would eliminate the need for Federal navigation improvements in Baker Cove and Pine Island Bay as described in this report. Plans for the entire area would:

- a. Include a city street and park development on the lower west bank of Birch Plain Creek;

- b. Relocate a state highway at the Penn. Central Railroad crossing at the head of Baker Cove, to eliminate a railroad underpass;

- c. Construct a culvert under the railroad crossing large enough to accommodate passage of canoes and small boats into Birch Plain Creek from Baker Cove;

- d. Dredge anchorages and channels north of Pine Island;

- e. Close the breach between Bushy Point Beach and Bushy Point, work to be conducted by Connecticut Park & Forest Commission as part of development of Bluff Point State Park;

f. Construct breakwaters on each side of the entrance between Pine Island and Bushy Point;

g. Construct a causeway across the waterway from Avery Point to Pine Island;

h. Develop a University of Connecticut Marine Biological Laboratory and city park on Pine Island.

42. Officials of the City of Groton decided to take action on their part of this plan before July 1969 in order to receive state aid and funding under the Community Development Act of 1967.

CONCLUSIONS

43. The Division Engineer finds that the existing anchorages in Pine Island Bay, Baker Cove, and Poquonock River are inadequate in areas and depth to accommodate the existing or expected increase in the recreational boat fleet. Improvements are needed in the area, to realize its full boating potential. Economically justified plans have been developed for anchorage and channel improvement in Pine Island Bay and Baker Cove. The existing anchorage in Poquonock River is too small and too far upstream to warrant the extensive dredging required for an entrance channel without the added benefit of a marina.

44. The City of Groton has now decided to join the State of Connecticut Department of Community Affairs in development of a master plan for the entire area. It is understood that navigation improvements to be accomplished through this plan would meet the needs of local boating interests. Therefore, it is concluded that no Federal navigation improvement is necessary at this time.

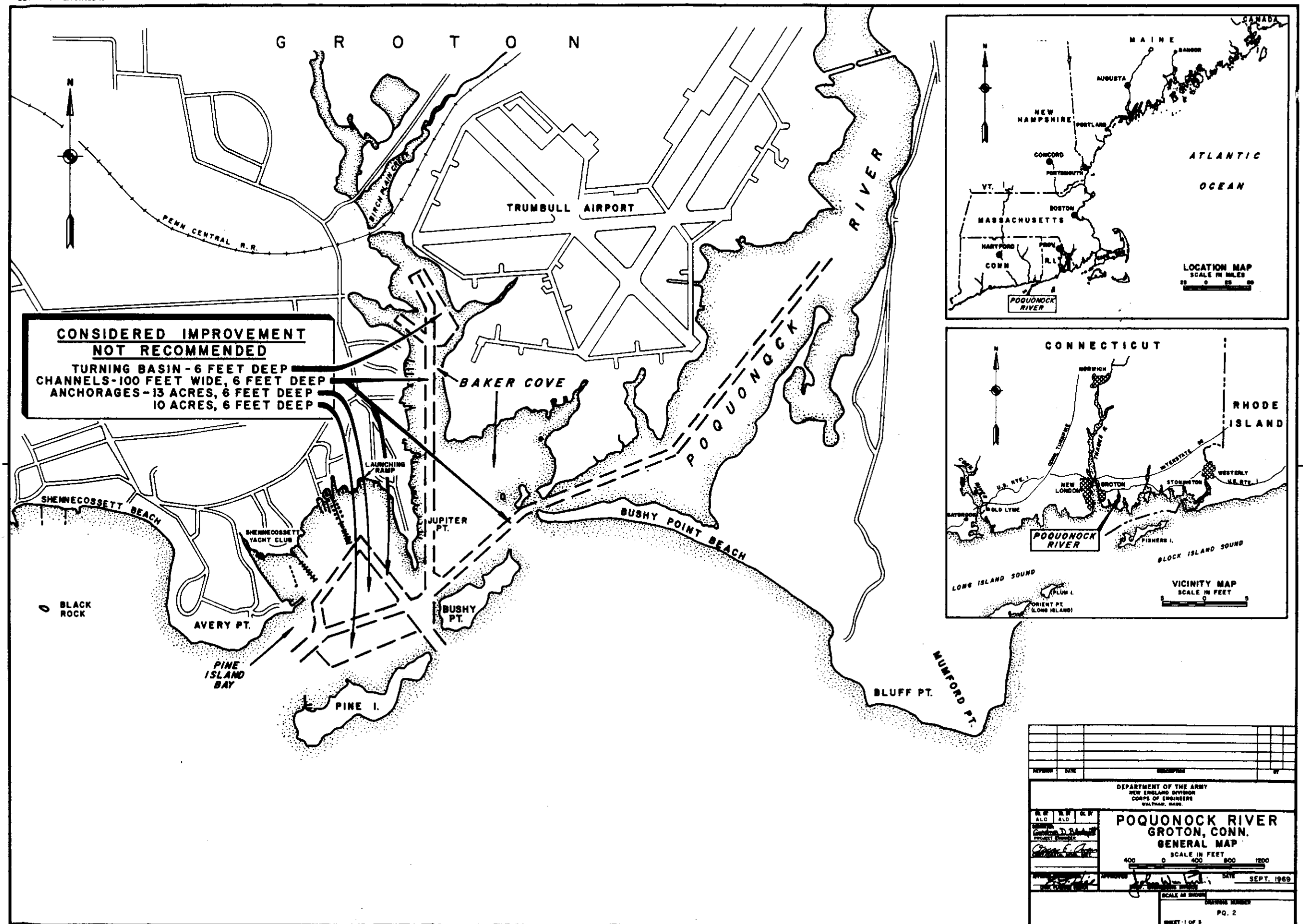
RECOMMENDATIONS

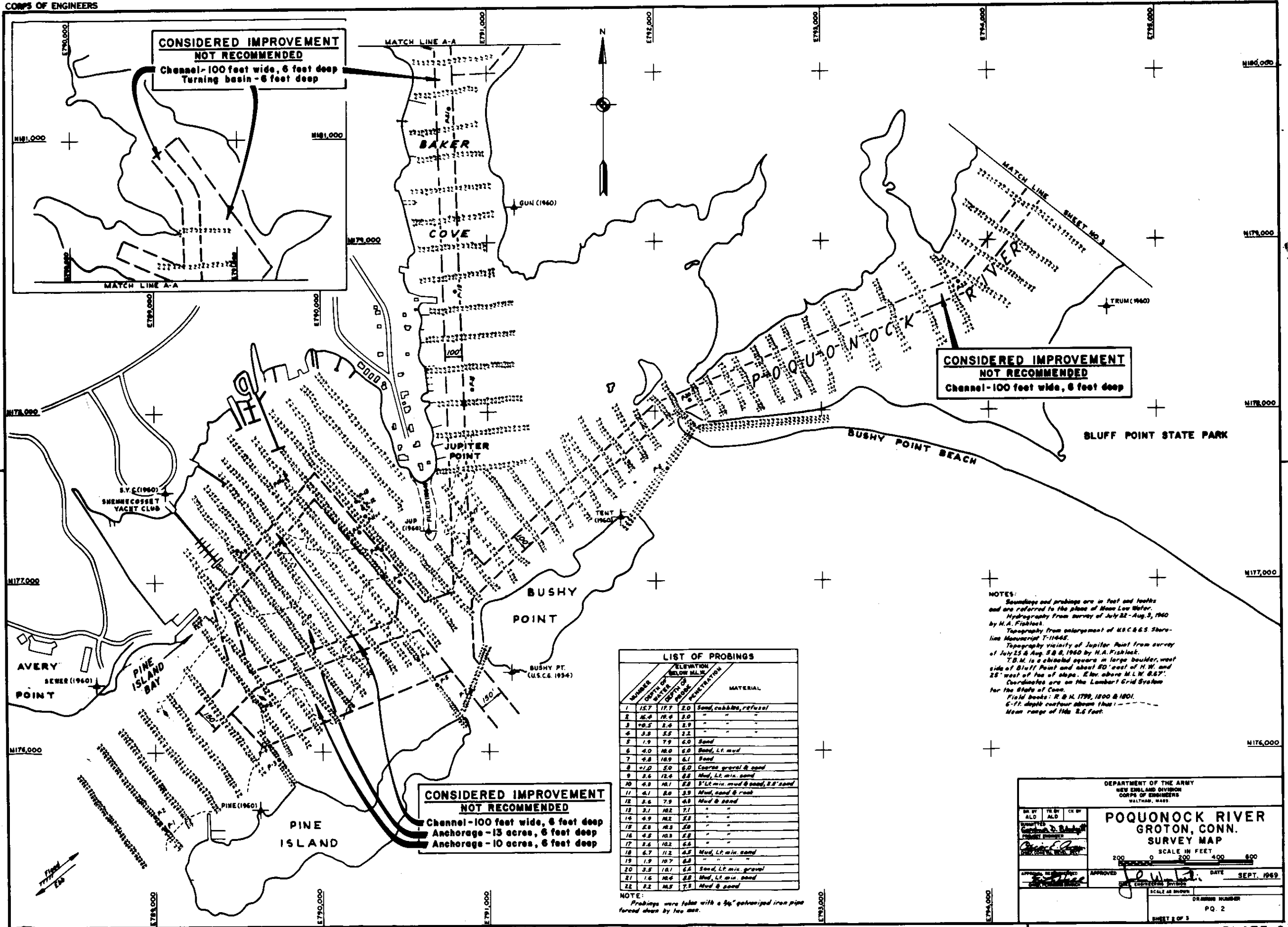
45. In view of the above action, the Division Engineer recommends no Federal navigation improvement in the vicinity of Poquonock River, Groton, Connecticut at this time.

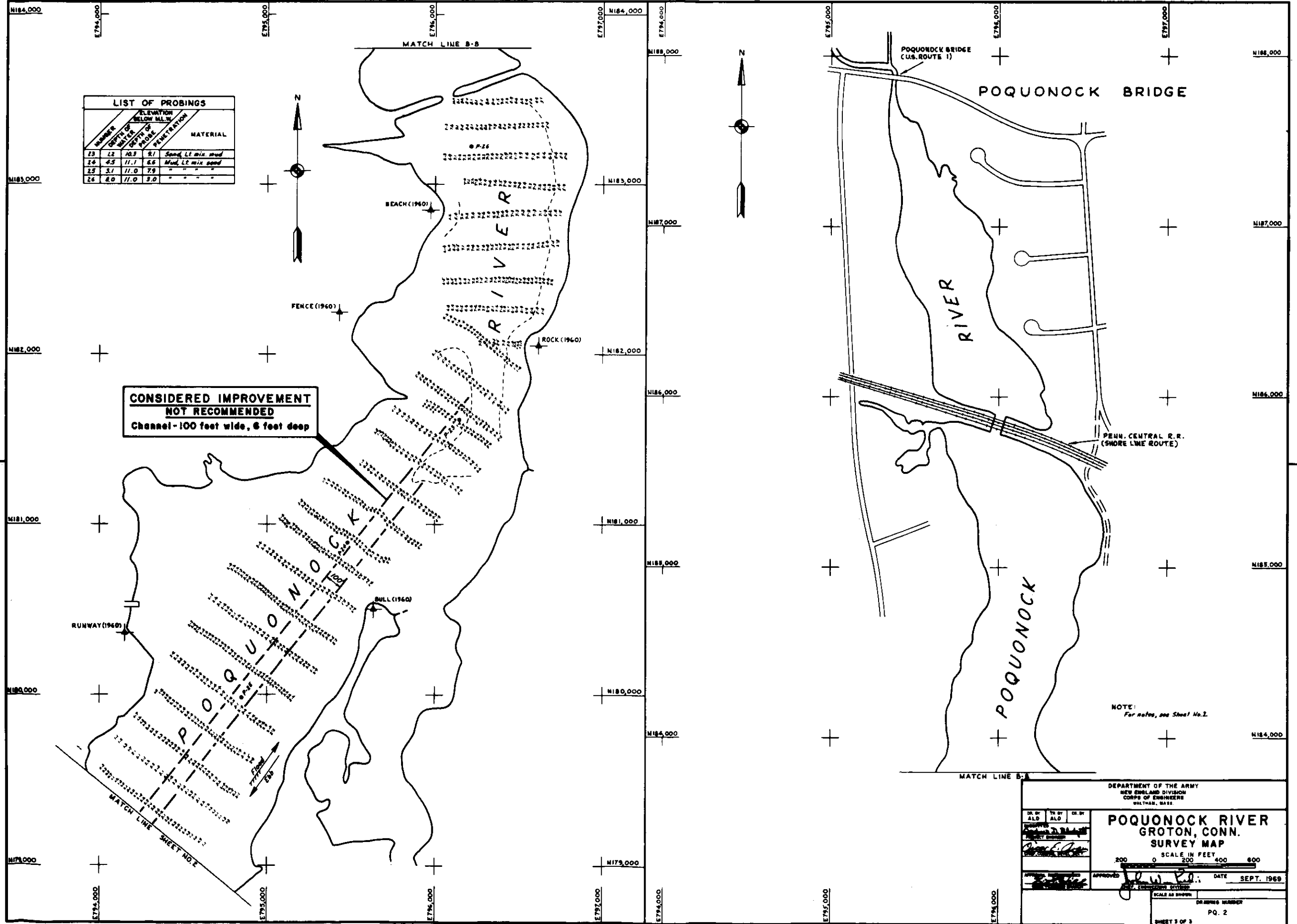
E. P. STEFANIK
Lt. Col., Corps of Engineers
Acting Division Engineer

4 Incls

1. Maps - 3 plates
2. Appendix A - Estimates
of Costs and Benefits
3. Appendix B - U. S. Fish
& Wildlife Report
4. Appendix C - Ltr from U. S.
Coast Guard
5. Appendix D - Correspondence







APPENDIX A

PLANS FOR IMPROVEMENT AND ESTIMATES OF FIRST COSTS AND BENEFITS

1. Introduction. Plans for improvement were developed for each of the three contiguous water bodies - Pine Island Bay, Baker Cove, and Poquonock River. The plans are optimum and reflect maximization of net benefits. Quantities are based on soundings and probings taken by hydrographic survey in July and August 1960. Dredging costs are based on use of hydraulic plant with disposal of spoil on Bushy Point Beach and nearby marsh areas and include 1 on 3 side slopes with one foot of overdepth allowance. The costs reflect prices prevailing in September 1969.

2. Benefits were computed as the reasonable annual return that boat owners could expect to receive if their boats were for hire. The net return to each owner varies generally with the type and size of each boat. The ideal net return is the maximum that could be attained with full unrestricted use of the waterway under consideration. The ideal return was judged to vary from 14 percent for the smaller boats to 8 percent for the larger boats. The net gain to each class of boat, expressed as a percentage of the depreciated value of each class, is the difference between present use of the harbor or waterway and the prospective future use following construction of the improvement. The sum of these gains to each boat class represents the annual benefit to the improvement under consideration. The following presents the specific information for each waterway.

3. Pine Island Bay. In view of the exposed conditions in the southern half of Pine Island Bay, anchorage improvement is limited to dredging about 13 acres in the northern portion of the harbor and 10 acres in the southern portion both to a depth of 6 feet; also, a channel 100 feet wide and 6 feet deep between these anchorages, and a marina access channel 100 feet wide and 6 feet deep. Located in the lee of Avery Point, this improvement would provide for deepening the two existing special anchorages in Pine Island Bay. In addition to increased use by the existing fleet, this would permit additional boats to utilize the special anchorages. It would also provide improved access to existing piers along the northern shore.

4. First costs of the project are estimated to be \$222,700 and annual charges amount to \$16,500. Tables 13 and 14 show the details of the first costs and annual charges for this plan of improvement as well as those for the other plans considered. Benefits from the proposed improvements are a result of additional anchorage which will accommodate 100 new boats and 20 equivalent transient boats and increased use of the 100 existing boats and the 10 existing equivalent transient craft. Benefits of \$47,600 are shown in Tables 1 through 4. This yields a benefit-cost ratio of 2.9.

TABLE 1 - BENEFITS TO RECREATIONAL BOATING

Existing Fleet - Locally Based

HARBOR: Pine Island Bay

HARBOR: Pine Island Bay												
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN				VALUE \$	ON CRUISE		
			AVERAGE \$	TOTAL \$	Ideal	% of Ideal		Gain		Avg. Days	% of Season	Value \$
						Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	55	1400	77,000	14	80	95	2.1	1617			
Inboards	15-20	7	2600	18,200	12	80	95	1.8	328			
	21-30	3	4300	12,900	11	75	95	2.2	284			
	31&Up											
Sterndrive	15-20	8	2500	20,000	12	80	95	1.8	360			
	21-25	5	4500	22,500	11	75	95	2.2	495			
	26&Up											
Cruisers	15-20	-										
	21-30	8	6500	52,000	9	75	95	1.8	936	12	8	75
	31-40											
	41-50											
	51&Up											
Aux. Sail	15-20	3	1800	5,400	9	80	95	1.4	76			
	21-30	3	4900	14,700	8	75	95	1.6	235	6	4	9
	31-40											
	41&Up											
Sailboats	8-15	4	500	2,000	12	80	95	1.8	36			
	16-20	4	1200	4,800	12	80	95	1.8	86			
	21-25											
	26&Up											
TOTALS		100		\$229,500					\$4,453	-		\$84
											\$4369	
										Say	\$4400	

TABLE 2 - BENEFITS TO RECREATIONAL BOATING
Existing Equivalent Transient Fleet

HARBOR: Pine Island Bay

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			Gain	VALUE \$	ON CRUISE		
			AVERAGE \$	TOTAL \$	Ideal	% of Ideal Pres.	Fut.			Avg. Days	% of Season	Value \$
RECREATIONAL FLEET												
Outboards	15-20											
Inboards	15-20	1	2,600	2,600	12	80	95	1.8	47			
	21-30	1	4,300	4,300	11	75	95	2.2	95			
	31&Up											
Sterndrive	15-20	3	2,500	7,500	12	80	95	1.8	135			
	21-25	2	4,500	9,000	11	75	95	2.2	198			
	26&Up											
Cruisers	15-20											
	21-30	3	6,500	19,500	9	75	95	1.8	351			
	31-40											
	41-50											
	51&Up											
Aux. Sail	15-20											
	21-30											
	31-40											
	41&Up											
Sailboats	8-15											
	16-20											
	21-25											
	26&Up											
TOTALS		10		\$42,900					\$826			
									Say	\$800		

TABLE 3 BENEFITS TO RECREATIONAL BOATING

Prospective New Fleet

HARBOR: Pine Island Bay			160 Day Season									
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE	ON CRUISE			
			AVERAGE	TOTAL	Ideal	% of Ideal	Gain	\$	Avg. Days	% of Season	Value \$	
			\$	\$		Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	50	1,400	70,000	14	0	95	13.3	9,310			
Inboards	15-20	4	2,600	10,400	12	0	95	11.4	1,186			
	21-30	4	4,300	17,200	11	0	95	10.5	1,806			
	31&Up	2	16,000	32,000	10	0	95	9.5	3,040			
Sterndrive	15-20	4	2,500	10,000	12	0	95	11.4	1,140			
	21-25	4	4,500	18,000	11	0	95	10.5	1,890			
	26&Up	2	9,800	19,600	10	0	95	9.5	1,862			
Cruisers	15-20	--	--	--	--	--	--	--	--			
	21-30	6	6,500	39,000	9	0	95	8.6	3,354	12	8	268
	31-40	4	16,000	64,000	8	0	95	7.6	4,864	16	10	486
	41-50	4	40,000	160,000	8	0	95	7.6	12,160	24	15	1,824
	51&Up	--	--	--	--	--	--	--	--	--	--	--
Aux. Sail	15-20	3	1,800	5,400	9	0	95	8.6	465			
	21-30	3	4,900	14,700	8	0	95	7.6	1,120	6	4	45
	31-40	--	--	--	--	--	--	--	--	--	--	--
	41&Up	--	--	--	--	--	--	--	--	--	--	--
Sailboats	8-15	2	500	1,000	12	0	95	11.4	114			
	16-20	4	1,200	4,800	12	0	95	11.4	547			
	21-25	4	2,100	8,400	11	0	95	10.5	882	6	4	35
	26&Up	--	--	--	--	--	--	--	--	--	--	--
TOTALS		100		\$496,600					\$43,740			\$2,658
										\$41,082 Say \$42,500		

Average Annual Equivalent (7 yrs) = (\$41,100 x 0.858) = \$35,264 Say \$35,300

TABLE 4 BENEFITS TO RECREATIONAL BOATING
Prospective Equivalent Transient Fleet

HARBOR: Pine Island Bay

TYPE OF	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE \$	ON CRUISE		
			AVERAGE	TOTAL	Ideal	% of Ideal	Gain		Avg.	% of	Value
			\$	\$		Pres.	Fut.		Days	Season	\$
RECREATIONAL FLEET											
Outboards	15-20										
Inboards	15-20	4	2,600	10,400	12	0	95	11.4	1,184		
	21-30	4	4,300	17,200	11	0	95	10.5	1,808		
	31&Up										
Sterndrive	15-20	4	2,500	10,200	12	0	95	11.4	1,140		
	21-25	4	4,500	18,000	11	0	95	10.5	1,892		
	26&Up										
Cruisers	15-20	-									
	21-30	4	6,500	26,000	9	0	95	8.6	2,236		
	31-40										
	41-50										
	51&Up										
Aux. Sail	15-20										
	21-30										
	31-40										
	41&Up										
Sailboats	8-15										
	16-20										
	21-25										
	26&Up										
TOTALS		20		\$81,800					\$8,260		

Average Annual Equivalent (7yrs) = (\$8,260 x 0.858) = \$7,087 Say \$7,100

5. Baker Cove. Improvement for Baker Cove consists of a channel 6 feet deep, 100 feet wide and 900 feet long through the shallow north-eastern end of Pine Island Bay, joining a channel of similar dimensions extending about 3,000 feet into Baker Cove with two branches of 900 feet and 400 feet. It includes a small turning basin at the head of the channel and would service all existing piers along the eastern shore of Jupiter Point. The first costs and annual charges, detailed in Tables 13 and 14 are \$382,000 and \$25,200, respectively.

6. Benefits as a result of this improvement would accrue to the existing fleet of 75 boats and the 10 equivalent transient craft through increased use. In addition, the improvement would attract 65 new boats and 5 equivalent transient boats. These benefits are given in Tables 5 through 8, and total \$27,000. The benefit-cost ratio is 1.1.

7. Poquonock River. The plan of improvement consists of a channel 6 feet deep and 100 feet wide extending from Pine Island Bay about 7,000 feet upstream to naturally deep water in the upper third of the river. It would allow unrestricted use of the river to pleasure craft with the exception of sail and auxiliary sailboats. These craft will not be able to enter the river because the runway lights at Trumbull Airport are to be extended and the height of vessels will be restricted. To assure stabilization of the channel and to reduce future maintenance, a stone dike would be constructed between Bushy Point Beach and Bushy Point. The first costs of the improvement and annual charges are \$393,000 and \$25,600. See Tables 13 and 14 for details.

8. The channel improvement would result in benefits to the existing 45 locally-based boats and the 10 equivalent transient boats. It would further encourage expansion of the fleet by 60 new boats and 5 attracted equivalent transient craft. These craft could be accommodated in the naturally deep waters in the upper third portion of the waterway, which contains about 15 acres after deducting for the 100-foot fairway. At 8 boats per acre, this area would accommodate 120 boats. The benefits accruing from this improvement are \$13,000 which are shown in Tables 9 through 12. The resulting benefit-cost ratio is 0.5 to 1.0.

9. Because of the absence of shore facilities along the Poquonock River, it is considered that marina facilities would be required to insure growth of the fleet. With a 200-boat marina available, the benefit-cost ratio becomes 1.4. However, no local interests are willing to provide the marina.

TABLE 5 BENEFITS TO RECREATIONAL BOATING

Existing Fleet - Locally Based

HARBOR: Baker Cove			160 Day Season									
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN				VALUE \$	ON CRUISE		
			AVERAGE \$	TOTAL \$	Ideal	% of Ideal		Gain		Avg. Days	% of Season	Value \$
						Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	45	1,400	63,000	14	80	100	2.8	1,764			
Inboards	15-20	5	2,600	13,000	12	80	100	2.4	312			
	21-30	3	4,300	12,900	11	75	100	2.8	361			
	31&Up	-										
Sterndrive	15-20	6	2,500	15,000	12	80	100	2.4	360			
	21-25	5	4,500	22,500	11	75	100	2.8	630			
	26&Up	-										
Cruisers	15-20	-										
	21-30	5	6,500	32,500	9	75	100	2.3	750	12	8	60
	31-40	-										
	41-50	-										
	51&Up	-										
Aux. Sail	15-20	2	1,800	3,600	9	80	100	1.8	65			
	21-30	1	4,900	4,900	8	75	100	2.0	100	6	4	5
	31-40	-										
	41&Up											
Sailboats	8-15	2	500	1,000	12	80	100	2.4	25			
	16-20	1	1,200	1,200	12	80	100	2.4	30			
	21-25	-										
	26&Up	-										
TOTALS		75		\$169,600					\$4,397			\$65

\$4,397 - \$65 - \$4,332

Say \$4,300

TABLE 6 BENEFITS TO RECREATIONAL BOATING
Existing Equivalent Transient Fleet

HARBOR: Baker Cove

HARBOR: BARRY COVE												
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE \$	ON CRUISE			
			AVERAGE	TOTAL	Ideal	% of Ideal			Gain	Avg. Days	% of Season	Value \$
			\$	\$		Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	2	1,400	2,800	14	80	100	2.8	78			
Inboards	15-20	2	2,600	5,200	12	80	100	2.4	125			
	21-30	3	4,300	12,900	11	75	100	2.8	361			
	31&Up											
Sterndrive	15-20											
	21-25	1	4,500	4,500	11	75	100	2.8	126			
	26&Up											
Cruisers	15-20											
	21-30	2	6,500	13,000	9	75	100	2.3	300			
	31-40											
	41-50											
	51&Up											
Aux. Sail	15-20											
	21-30											
	31-40											
	41&Up											
Sailboats	8-15											
	16-20											
	21-25											
	26&Up											
TOTALS		10		\$38,400					\$990			
								Say	\$1,000			

TABLE 7 BENEFITS TO RECREATIONAL BOATING

Prospective New Fleet

HARBOR: Baker Cove

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE \$	ON CRUISE			
			AVERAGE	TOTAL	Ideal	% of Ideal	Gain		Avg. Days	% of Season	Value \$	
			\$	\$		Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	34	1,400	47,600	14	0	100	14.0	6,664			
Inboards	15-20	3	2,600	7,800	12	0	100	12.0	936			
	21-30	2	4,300	8,600	11	0	100	11.0	946			
	31&Up	1	16,000	16,000	10	0	100	10.0	1,600			
Sterndrive	15-20	2	2,500	5,000	12	0	100	12.0	600			
	21-25	3	4,500	13,500	11	0	100	11.0	1,485			
	26&Up	1	9,800	9,800	10	0	100	10.0	980			
Cruisers	15-20	-	-	-	-	-	-	-	-			
	21-30	2	6,500	13,000	9	0	100	9.0	1,170	12	8	94
	31-40	4	16,000	64,000	8	0	100	8.0	5,120	16	10	512
	41-50	3	40,000	120,000	8	0	100	8.0	9,600	24	15	1,440
	51&Up	-	-	-	-	-	-	-	-	-	-	-
Aux. Sail	15-20	2	1,800	3,600	9	0	100	9.0	324	-	-	-
	21-30	2	4,900	9,800	8	0	100	8.0	784	6	4	31
	31-40	-	-	-	-	-	-	-	-	-	-	-
	41&Up	-	-	-	-	-	-	-	-	-	-	-
Sailboats	8-15	1	500	500	12	0	100	12.0	60	-	-	-
	16-20	3	1,200	3,600	12	0	100	12.0	432	-	-	-
	21-25	2	2,100	4,200	11	0	100	11.0	462	6	4	18
	26&Up	-	-	-	-	-	-	-	-	-	-	-
TOTALS		65		\$427,000					\$31,163			\$2,095

Average Annual Equivalent (16 yrs) = \$29,100 x 0.688 = \$20,000

= \$29,068

Say \$29,100

TABLE 8 BENEFITS TO RECREATIONAL BOATING

Prospective Equivalent Transient Fleet

HARBOR: Baker Cove

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE \$	ON CRUISE			
			AVERAGE	TOTAL	Ideal	% of Ideal			Gain	Avg. Days	% of Season	Value \$
			\$	\$		Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20											
Inboards	15-20											
	21-30											
	31&Up											
Sterndrive	15-20	1	2,500	2,500	12	0	100	12.0	300			
	21-25	2	4,500	9,000	11	0	100	11.0	990			
	26&Up											
Cruisers	15-20											
	21-30	2	6,500	13,000	9	0	100	9.0	1,170			
	31-40											
	41-50											
	51&Up											
Aux. Sail	15-20											
	21-30											
	31-40											
	41&Up											
Sailboats	8-15											
	16-20											
	21-25											
	26 & Up											
TOTALS		5		\$24,500					\$2,460	Say	\$2,500	

Average Annual Equivalent (16 yrs) - (\$2,500 x 0.688) = \$1,720 Say \$1,700

TABLE 9 BENEFITS TO RECREATIONAL BOATING

Existing Fleet - Locally Based

HARBOR: Poquonock River, Groton, Connecticut										160 Day Season		
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN				VALUE \$	ON CRUISE		
			AVERAGE	TOTAL	Ideal	% of Ideal		Gain		Avg. Days	% of Season	Value \$
			\$	\$		Pres.	Fut.					
RECREATIONAL FLEET												
Outboards	15-20	35	1,400	49,000	14	80	95	2.1	1,029			
Inboards	15-20	6	2,600	15,600	12	80	95	1.8	281			
	21-30	3	4,300	12,900	11	75	95	2.2	284			
	31&Up	--										
Sterndrive	15-20											
	21-25											
	26&Up											
Cruisers	15-20	--	--	--	--	--	--	--	--	--	--	--
	21-30	1	6,500	6,500	9	70	95	2.3	150	12	8	12
	31-40											
	41-50											
	51&Up											
Aux. Sail	15-20											
	21-30											
	31-40											
	41&Up											
Sailboats	8-15											
	16-20											
	21-25											
	26&Up											
TOTALS		45		\$84,000					\$1,744			\$12
											= \$1,732	
										Say	\$1,700	

A-13

HARBOR: Poquonock River, Groton, Connecticut											
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED	VALUE	PERCENT RETURN			VALUE	ON CRUISE		
			AVERAGE	TOTAL	Ideal	% of Ideal	Gain	\$	Avg.	% of	Value
			\$	\$		Pres.	Fut.		Days	Season	\$
RECREATIONAL FLEET											
Outboards	15-20	7	1,400	9,800	14	80	95	2.1	206		
Inboards	15-20	2	2,600	5,200	12	80	95	1.8	94		
	21-30										
	31&Up										
Sterndrive	15-20										
	21-25										
	26&Up										
Cruisers	15-20	-									
	21-30	1	6,500	6,500	9	75	95	1.8	117		
	31-40										
	41-50										
	51&Up										
Aux. Sail	15-20										
	21-30										
	31-40										
	41&Up										
Sailboats	8-15										
	16-20										
	21-25										
	26&Up										
TOTALS		10		\$21,500					\$417		
									Say	\$400	

TABLE 11 BENEFITS TO RECREATIONAL BOATING

Prospective New Boats

HARBOR: Poquonock River, Groton, Connecticut									160 Day Season				
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN				VALUE \$	ON CRUISE			
			AVERAGE \$	TOTAL \$	Ideal	% of Ideal		Gain		Avg. Days	% of Season	Value \$	
						Pres.	Fut.						
RECREATIONAL FLEET													
Outboards	15-20	28	1,400	39,200	14	0	95	13.3	5,214				
Inboards	15-20	7	2,600	18,200	12	0	95	11.4	2,075				
	21-30	2	4,300	8,600	11	0	95	10.5	903				
	31&Up												
Sterndrive	15-20	5	2,500	12,500	12	0	95	11.4	1,425				
	21-25	6	4,500	27,000	11	0	95	10.5	2,835				
	26&Up	-	-	-	-	-	-	-	-				
Cruisers	15-20	-	-	-	-	-	-	-	-				
	21-30	8	6,500	52,000	9	0	95	8.6	4,472	12	8	358	
	31-40	2	16,000	32,000	8	0	95	7.6	2,432	16	10	243	
	41-50												
	51&Up												
Aux. Sail	15-20												
	21-30												
	31-40												
	41&Up												
Sailboats	8-15												
	16-20												
	21-25												
	26&Up												
TOTALS		60		\$189,500					\$19,356			601	
									\$19,356-\$601 - \$18,800				

Average Annual Equivalent (24 yrs) - $\$18,800 \times 0.571 = \$10,727$; Say \$10,700

TABLE 12 BENEFITS TO RECREATIONAL BOATING

Prospective Transient Fleet

HARBOR: Poquonock River, Groton, Connecticut					160 Day Season						
TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE		PERCENT RETURN			VALUE	ON CRUISE		
			AVERAGE	TOTAL	Ideal	% of Ideal		Gain	\$	Avg. Days	% of Value
			\$	\$		Pres.	Fut.				\$
RECREATIONAL FLEET											
Outboards	15-20	2	1,400	2,800	14	80	95	2.1	59		
Inboards	15-20	1	2,600	2,600	12	80	95	1.8	47		
	21-30	1	4,300	4,300	11	75	95	2.2	95		
	31&Up										
Sterndrive	15-20										
	21-25										
	26&Up										
Cruisers	15-20										
	21-30	1	6,500	6,500	9	75	95	1.8	117		
	31-40										
	41-50										
	51&Up										
Aux. Sail	15-20										
	21-30										
	31-40										
	41&Up										
Sailboats	8-15										
	16-20										
	21-25										
	26&Up										
TOTALS		5		\$16,200					\$318		

Average Annual Equivalent (24 yrs) = $\$318 \times 0.571 = \181 ; Say \$200

TABLE 13 - ESTIMATED FIRST COSTS

IMPROVEMENT	PINE ISLAND BAY	BAKER COVE	POQUONOCK RIVER	
Channel (Size)	6'x100'x3,850'	6'x100'x5,200'	6'x100'x7,000'	
Anchorage (Size)	23 acres	7 acres	--	
Dike (Length)	--	--	--	730 ft.
Quantity	82,700 cu.yd.	142,300 cu.yd.	116,200 cu.yd.	4,000 tons
Unit Cost	\$2.00	\$2.00	\$2.00	\$15,000
Basic Cost	\$165,400	\$286,600	\$232,400	\$60,000
Contingencies	<u>\$24,800</u>	<u>\$43,000</u>	<u>\$34,900</u>	<u>\$12,000</u>
Construction Cost	\$190,200	\$329,600	\$339,300	
Engrg. & Design	\$15,500	\$26,400	\$27,000	
Supervision & Admin.	\$13,300	\$23,000	\$23,700	
Project Cost	\$218,700	\$379,000	\$390,000	
Navigation Aids	\$4,000	\$3,000	\$3,000	
TOTAL COST	\$223,000	\$382,000	\$393,000	

TABLE 14 - ANNUAL CHARGES

ITEM	PINE ISLAND BAY	BAKER COVE	POQUONOCK RIVER
Interest (0.04875)	\$10,600	\$18,500	\$20,100
Amortization (0.00497)	1,100	1,900	1,900
Total Interest & Amortization	11,700	20,400	21,000
Maintenance			
Dredging	4,500	4,500	3,600
Stone Work	--	--	700
Navigation Aids	300	300	300
TOTAL ANNUAL CHARGES	\$16,500	\$25,200	\$25,600



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
59 TEMPLE PLACE
BOSTON, MASSACHUSETTS 02111

October 21, 1964

Division Engineer
U. S. Army Engineer Division, New England
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

This is our conservation and development report on the study of navigation improvements for Pine Island Bay, Baker Cove and the Poquonnock River, Groton, New London County, Connecticut. Your study was made under authority of Section 107 of the River and Harbor Act of July 3, 1958. Our report was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-666 inc.), in cooperation with the Connecticut State Board of Fisheries and Game and Connecticut State Shell Fish Commission. Those agencies concur in the report as indicated in their letters of October 15 and October 9, 1964, respectively. The report has been coordinated with and also represents the views of the Bureau of Commercial Fisheries.

It is our understanding that navigation improvements under consideration would provide a 15-acre mooring basin, six feet deep, in the northern part of Pine Island Bay. The hydraulic spoil materials, about 70,000 cubic yards, would be placed at the western end of Bushy Point Beach.

There is moderate use of the project area by waterfowl; hunting is limited because of the rather extensive dockside development. Winter flounder is the principal sport-fish species in the river and provides some fishing. Soft clams, hard clams, and blue crabs are present, but not in sufficient numbers to provide a significant shellfishery. Eel grass beds are relatively abundant throughout the bay. The State Board of Fisheries and Game maintains access facilities consisting of boat launching ramp and parking area on the bay.

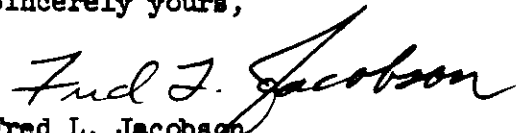
We conclude that the proposed dredging for navigation improvements will not have significant effects on fish and wildlife habitat or resources. Hydraulic spoil placed on the Bushy Point-Bluff Point Beach will cause no

significant damages to fish and wildlife resources. There will be no commercial fishery benefits resulting from project works.

We recommend, therefore--

1. That spoil be deposited only on the Bushy Point-Bluff Point Beach.

Sincerely yours,

A handwritten signature in cursive script, reading "Fred L. Jacobson". The signature is written in dark ink and is positioned above the printed name and title.

Fred L. Jacobson
Acting Regional Director

APPENDIX C

**TREASURY DEPARTMENT
UNITED STATES COAST GUARD**

ADDRESS REPLY TO:
COMMANDER
3RD COAST GUARD DISTRICT
U.S. CUSTOM HOUSE
NEW YORK 4, N.Y.



0-1
3260
15 July 1964

From: Commander, Third Coast Guard District
To: U. S. Army Engineer Division, New England
Corps of Engineers
424 Trapelo Road
Waltham 54, Mass.

— Subj: Navigation Study at Pine Island Bay, Groton, Conn.

Ref: (a) Corps of Engineers ltr NEDED-R dtd 20 June 1964

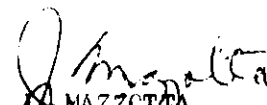
1. The Third Coast Guard District has no objection to the proposed mooring basin at Pine Island Bay. A copy of your letter has been forwarded to the Commanding Officer, U. S. Coast Guard Training Station, Groton, Conn., for comment.

2. In accordance with the request contained in paragraph 2 of reference (a), you are advised that the proposed Pine Island Bay Project will require the following aids to navigation:

5 ea 5th class can buoys \$2975.00

Annual maintenance would be 256.72 thereafter

3. The above estimates are approximate and subject to change.


J. MAZZOTTA
By direction

APPENDIX D



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:
NEDED-R

27 May 1969

Honorable Clarence E. Sharp
Mayor of the City of Groton
359 Thames Street
Groton, Connecticut 06340

Dear Mayor Sharp:

Subsequent to your meeting on 13 May 1969 with Mr. Gardner Blodgett of this office concerning harbor improvements at Groton, Mr. John C. Pickens, Director, Bureau of Program Management, Connecticut Department of Community Affairs, has informed us that community harbor improvement projects will continue to be eligible for development under the 1967 Community Development Act. Although harbor projects will receive lower priority than such programs as public housing and industrial development, Mr. Pickens indicated that your Groton proposal has good prospects for funding in Fiscal Year 1970.

As your Pine Island Bay and Baker Cove proposal is much more comprehensive than the improvement that would be eligible for consideration under a Federal navigation project, we will proceed to submit an unfavorable survey report on the Poquonock River in order to answer the outstanding Congressional request for a report on this area, including the Pine Island Bay and Baker Cove waterways.

In the event that State participation in your comprehensive plan is not forthcoming, I have inclosed a Section 107 small navigation project information sheet and a draft application should you wish to request Section 107 consideration of channel and anchorage improvements

NEDED-R
Honorable Clarence E. Sharp

27 May 1969

at Pine Island Bay and Baker Cove at a future date. Your proposed causeway, breakwater, dredging and park development plan appears to have real merit.

Sincerely yours,

2 Incls
As stated

F. R. DAY
Colonel, Corps of Engineers
Acting Division Engineer

POQUONOCK RIVER, GROTON, CONNECTICUT

Information called for by Senate Resolution 148, 85th Congress,
Adopted 28 January 1958.

1. Navigation problems - Poquonock River is a small tidal inlet located on the north shore of Fishers Island Sound, about 3.5 miles west of Mystic River and about 2.3 miles east of the entrance to New London Harbor. Baker Cove lies just to the west of Poquonock River; the two waterways have a common mouth between Bushy Point on the southeast and Jupiter Point on the northwest. The waterway seaward of the mouth is known as Pine Island Bay.

2. The principal navigation problems in the area consist of a lack of protected anchorage of adequate depth for recreational craft in Pine Island Bay, which is exposed in part to southwesterly winds and shallow winding natural channels leading into Baker Cove and Poquonock River. Operators of boats using the channels must wait for favorable tides to reach berths and moorings in Baker Cove and Poquonock River.

3. Improvements Considered - Local interests have requested break-water protection and anchorage improvements in Pine Island Bay and channel improvements in Baker Cove and Poquonock River. A plan of improvement consisting of a total anchorage area of 23 acres with a 100-foot wide, 6-foot deep access channel has been developed for the naturally protected area north of Pine Island. The estimated total cost of construction is \$223,000. The total annual benefits for the improvement would amount to \$47,600. The benefit-cost ratio would be 2.9 to 1.0. Dredging of a channel 100 feet wide, 6 feet deep, extending about 3,900 feet into Baker Cove with two branch channels 900 and 400 feet long, including a small turning basin at the head of the channel, is estimated to cost \$382,000. Annual benefits resulting from this improvement would amount to \$27,000. The benefit-cost ratio is 1.1 to 1.0. Dredging of Poquonock River 6 feet deep, 100 feet wide for a total distance of 7,000 from Pine Island Bay to the naturally deep water in the upper third of the river would provide access for small recreational craft. The total cost of construction is presently estimated to be \$393,000. However, because of the limited anchorage area available in the river, the cost of construction would exceed the benefits derived, resulting in a benefit-cost ratio of 0.5 to 1.0. In order to economically

justify improvement of Poquonock River it would be necessary for local interests to construct a 200 boat marina in the upper portion of the river. At present no local interests are willing to provide such a facility.

4. Discussion - The study has revealed that desired navigation improvements on Pine Island Bay and Baker Cove are feasible. However, the City of Groton prefers to join the State of Connecticut in the development of a master plan for the entire area. Fulfillment of this plan would preclude construction of the proposed Federal navigation improvements. The master plan includes dredging and breakwater construction that would meet present needs of local boating interests. In view of this, the Division Engineer recommends no Federal navigation improvement in the vicinity of Poquonock River at this time.